



# User Manual

  
**Piper Warrior**  
**PA28-161**

for Microsoft™ Flight Simulator

# Copyright

## **Copyright © 2007 Australian Simulation**

All rights reserved. No part of this manual may be reproduced, stored or distributed without the written consent of Australian Simulation.

The information contained in this manual is current as of publication or revision date. Any part of this manual is subject to change without notice at the discretion of Australian Simulation.

The current Manual for this aircraft package can be downloaded from the Australian Simulation web site at **[www.aussim.com.au/piper/downloads.asp](http://www.aussim.com.au/piper/downloads.asp)**

**Published on: Thursday, May 3, 2007**

**Revision 2**

# Table of Contents

1 - Introduction .....	1.1
About the Piper Warrior .....	1.2
Registration Information.....	1.3
Naming Conventions .....	1.3
2 - Specifications.....	2.1
Aircraft Overview .....	2.2
Performance .....	2.3
3 – Checklists.....	3.1
Pre Start.....	3.2
After Start.....	3.2
Taxi .....	3.2
Taxi .....	3.3
Run – Up.....	3.3
Pre Take-Off .....	3.3
Pre Take-Off .....	3.4
Take Off .....	3.4
Before Landing .....	3.4
Before Landing .....	3.5
After Landing .....	3.5
Shut Down .....	3.5
4 – Aircraft Information.....	4.1
General Information .....	4.2
5 – Warrior II Cockpit .....	5.1
Panel Layout.....	5.2
Instruments and Controls.....	5.3

Aircraft Control Panel.....	5.12
VC Yoke Switching .....	5.13
FS-X Cameras .....	5.14
6 – Warrior III cockpit.....	6.1
Panel Layout.....	6.2
Instruments and Controls.....	6.3
Aircraft Control Panel.....	6.24
VC Yoke Switching .....	6.25
FS-X Cameras .....	6.26

# 1 - Introduction

## About the Piper Warrior

Congratulations on your purchase of the Australian Simulation Piper Warrior Package for Microsoft™ Flight Simulator.

This aircraft, designed for Microsoft™ Flight Simulator 9 (*2004 a Century of Flight*) and Flight Simulator X using the latest 3D design software and programming techniques, offers the best of the old and new. The result is an excellent representation of what it's like to fly a real Piper Warrior. From the accurate flight model, to the just as accurate panels and gauges programmed for each version of the Warrior.

Whether you're a student pilot, an experienced aviator or simply a flight simulator enthusiast, you'll appreciate the realism that is obtained in this package.

The software designer as well as all of our beta testers has experience flying Piper Warriors, with a combined total of over 500 hours flying time in this type of aircraft.

This manual contains everything you'll need to know about the Australian Simulation Piper Warrior. There are many similarities between this and a real PA28-161 Pilot Operating Handbook, but this documentation has been written specifically for the Australian Simulation Piper Warrior package. Supplied checklists are based on real Piper Warrior checklists, but almost every aspect has in one way or another, been made interactive in this release, thus providing the utmost realism to the Flight Simulator pilot.

## Registration Information

Please use the area provided to store your registration information for future reference. Should you ever need to reinstall this package or require assistance from Australian Simulation support staff, you will need either your serial number or the order number that was generated at time of purchase.

### Registration Information

Order Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of purchase: \_\_\_\_\_

Purchased from: \_\_\_\_\_

## Naming Conventions

In the process of reading this document you may come across abbreviations for certain words which may not be immediately obvious to all readers, so the list below identifies most or all of these abbreviations so everyone is able to understand exactly what we are talking about.

- PA28  
The aircraft itself. (Piper Warrior II or III)
- ACP – Aircraft Control Panel  
Stand alone software application that ships with this package. Great tool which allows complete customisation of your aircraft for Flight Simulator.
- POH – Pilot Operating Handbook  
This document.
- Aussim - Australian Simulation  
Developers of this and other Flight Simulation products.
- VC – Virtual Cockpit  
This is the 3D representation of the cockpit, or interior of the aircraft.

## 2 - Specifications



## Aircraft Overview

See the tables below for detailed information about the Piper Warrior.

Engine	
Manufacturer	Lycoming
Model	O-320-D3G
No. Cylinders	4
Horsepower	160 hp

Propeller	
No. Propellers	1
No. Blades	2
Type	Fixed Pitch
Diameter	1.85 m

Weights	
Max Takeoff Weight	2,440lbs / 1,107kg
Empty Weight	1,536lbs / 697kg
Useful Load	911 lbs / 413 kg

Dimensions	
Wing Span	35.0 ft / 10.7 m
Length	23.8 ft / 7.3 m
Height	7.3 ft / 2.2 m
Wing Area	170 <sup>2</sup> ft / 15.8 <sup>2</sup> m

Range	
Cruising Range	513 nm / 950 km
45 min fuel reserve @ 55% power @ 10,000 ft best economy mixture.	

## Performance

### Speeds

Never Exceed ( $V_{ne}$ )	160kts / 297 km/h
Max Speed	117kts / 217 km/h
Manoeuvring Speed ( $V_a$ )	111kts / 206 km/h
Stall Speed Full Flap ( $V_{so}$ )	44kts / 81 km/h
Stall Speed No Flap ( $V_s$ )	50kts / 93 km/h
Max Flap ext. Speed ( $V_{fe}$ )	103kts / 191 km/h

### Engine

Max Continuous RPM	2700
Max oil Temp.	473° f / 245° c
Max Oil Pressure	100 psi
Max Fuel Pressure	8 psi

### Fuel

Usable Fuel	48 GAL / 182 litres
Approved Type	100 Octane AVGAS

### Airframe / Structure

Max Angle of Bank ( $AoB$ )	60°
Max Crosswind (Landing)	17kts
Approved Manoeuvres	
Steep Turns (Entry Speed)	111kts / 206 km/h
Chandelles (Entry Speed)	111kts / 206 km/h
Lazy Eights (Entry Speed)	111kts / 206 km/h
<b>Prohibited Manoeuvres</b>	<b>Spins</b>
—	<b>Inverted Flight</b>

**FLIGHT INTO KNOWN ICING CONDITIONS PROHIBITED**

# 3 – Checklists

## Pre Start

Pre – Start Checks	
Maintenance Release	Checked and signed
Brakes	Check Pressure / Set Park brake
Circuit Breakers	SET
Fuel Selector	ON – Set to tank with least fuel
Mixture	RICH
Throttle	CRACKED ~ ½ inch / 1 cm
Primer	4-5 Pumps cold start – 1-2 hot start
Switches	Master Battery ON - Beacon ON
Fuel Pump	ON – Check pressure
Magnetos	BOTH
Area	Clear
Start	Start Engine

## After Start

After Start Checks	
Throttle	Set to 1000 RPM
Oil Pressure	In Green arc within 30 seconds
Fuel Pump	OFF – Check pressure (Green arc)
Alternator	ON – Check Charging
Suction	CHECK – 2-5 inches
Avionics	As required
Circuit Breakers	SET
ATIS	Tune - Check QNH - Set Altimeter

## Taxi

Taxi Checks	
Brakes	Check pressure and operation
Turning Left	D.G / HSI Turning Left
-	Magnetic Compass turning left
-	T.C – Skidding right / Turning left
-	A.I – Remains erect
Turning Right	D.G / HSI Turning Right
-	Magnetic Compass turning right
-	T.C – Skidding left / Turning right
-	A.I – Remains erect

## Run – Up

Engine Run-up Checks	
Oil	Temp. in green arc
Power	2000 RPM
Left magneto	Switch to: Max drop 175 RPM
Right Magneto	Switch to: Max drop 175 RPM
Compare	Max differential of 50 RPM L/R Mag.
Gauges	Check all normal
Carb. Heat	ON – Check slight drop in RPM
Idle	Check – 750 RPM – Reset 1000 RPM
Brief	Passenger safety brief

## Pre Take-Off

Before Takeoff Checks	
Trim	Set for Takeoff (Neutral)
Mixture	RICH
Primer	LOCKED
Fuel	Check pressure – Change Tanks
Flaps	Check – 3 Stages
Instruments	Left to Right – Check and Set
Switches	BATT ON – ALT ON – MAG BOTH
Controls	Check full and free movement
Hatches	Check Closed – Harnesses ON

## Take Off

Takeoff / Line-up Checks	
Fuel pump	ON – Check pressure in green arc / Ensure fullest tank selected
Instruments	CHECK – D.G. – QNH SET – A.H UP
Switches	MAGS BOTH – Strobes ON - Lights
Transponder	SET to ALT – STBY for Circuits

## Before Landing

Pre-Landing Checks	
Brakes	Check pressure – Park brake OFF
Undercarriage	Down and Locked <i>(N/A for this aircraft)</i>
Mixture	RICH
Fuel Pump	ON – Fullest tank selected
Oil	CHECK – Pressure & Temp in green
Carb Heat	ON
Hatches	Hatches & harnesses secure

## After Landing

After-Landing Checks	
Flaps	RETRACTED
Fuel Pump	OFF
Avionics	Turn off all unnecessary avionics
Radios	Set as required

## Shut Down

Shutdown Checks	
Power	Set to 1000 RPM
Radios	OFF
Magnetos	Check both for grounding
Shutdown	Close Throttle & Mixture to cut-off
Keys	Remove - place on instrument panel

# 4 – Aircraft Information



## General Information

### Loading

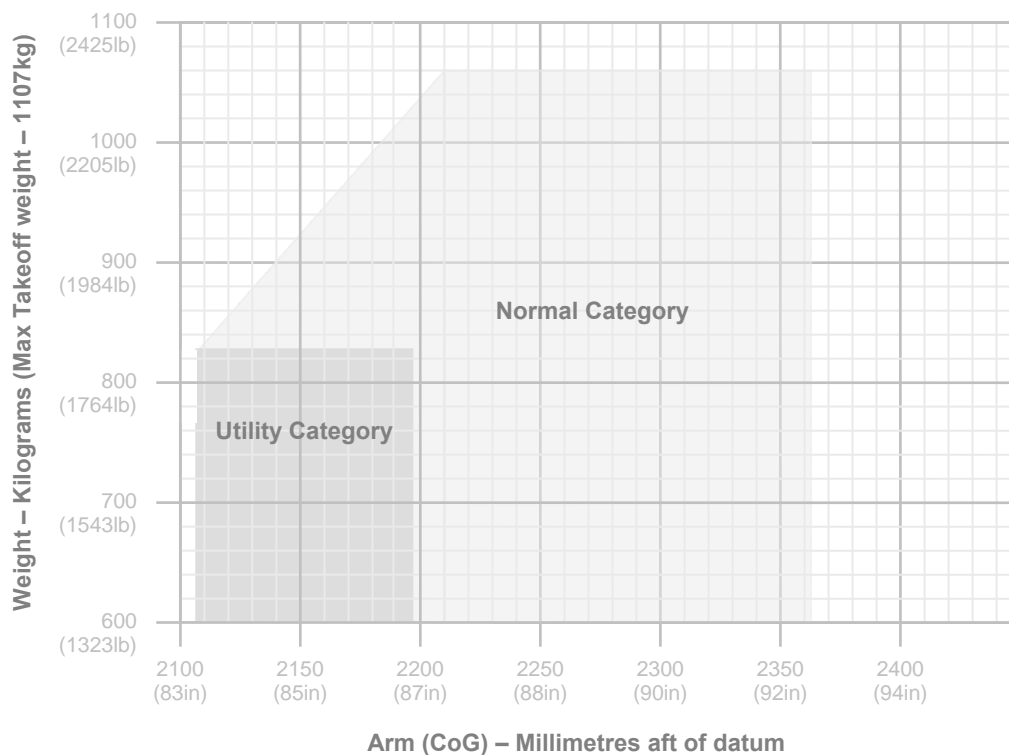
Normal category, Maximum weight 2440 lb, Max baggage 200 lb  
+3.8g flaps up, +2g flaps down. No inverted manoeuvres approved.

Utility category, Maximum weight 1950 lb, No baggage  
+4.4g and - 1.76g flaps up, +2g flaps down. No inverted manoeuvres approved

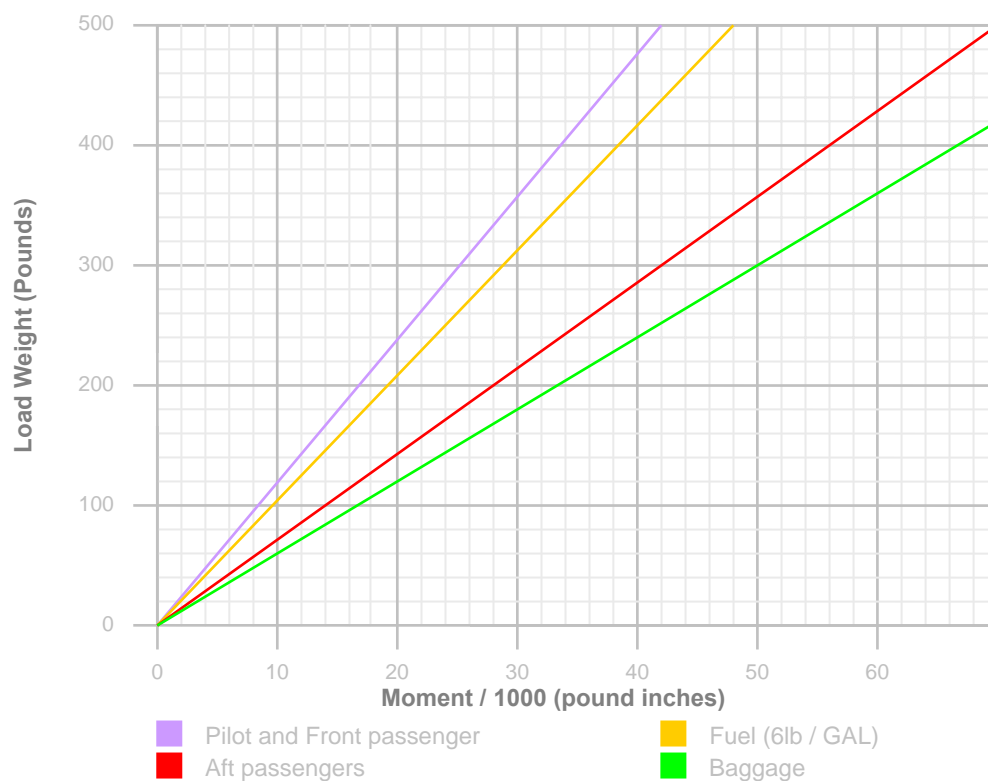
### Gliding Range

Engine inoperative, clean and 73kts - 1.73 nm per 1000 ft

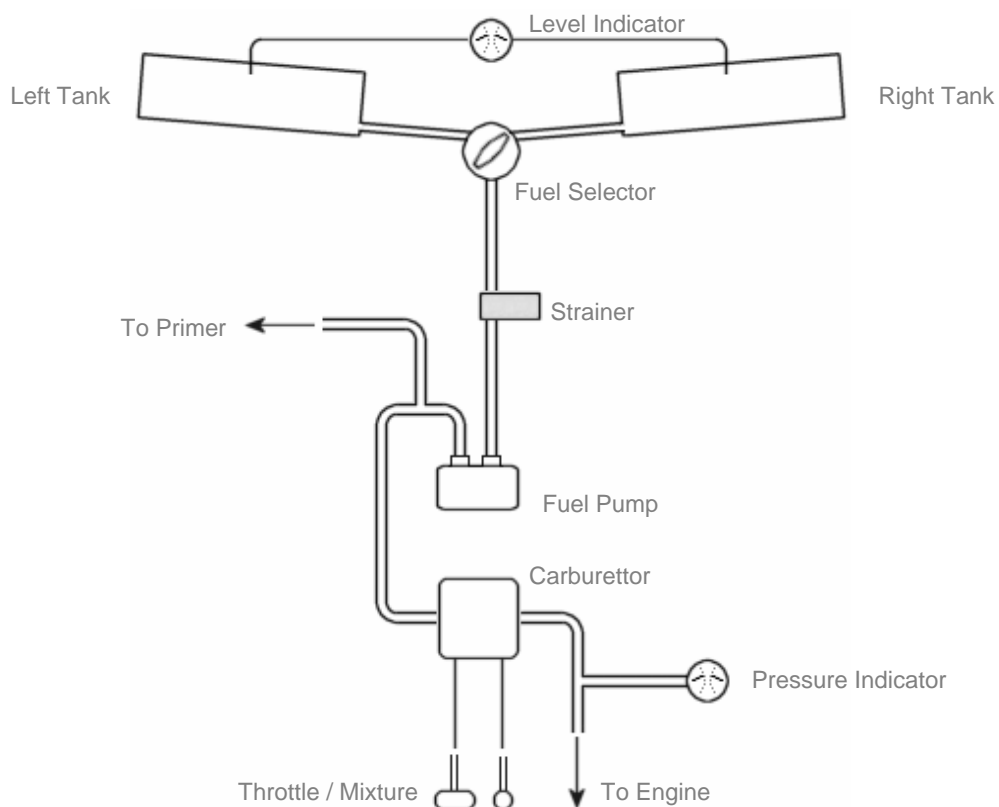
### Centre of Gravity



## Loading graph

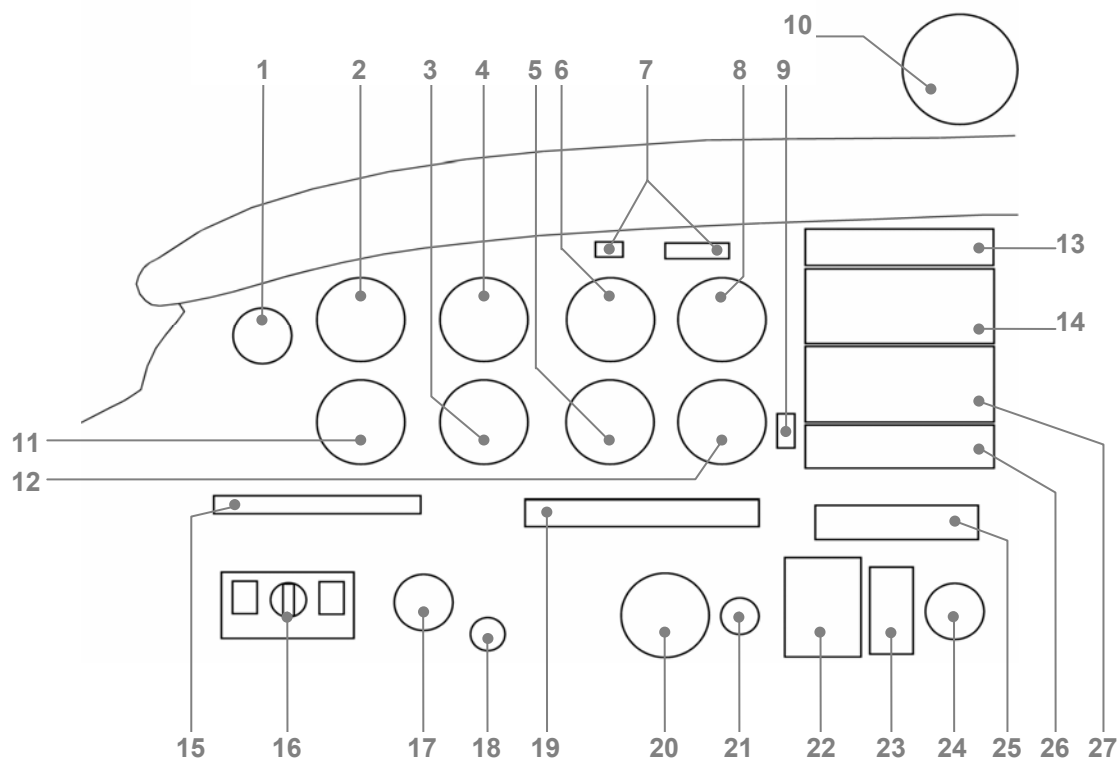


## Fuel System



# 5 – Warrior II Cockpit

## Panel Layout



- |                              |                        |                         |
|------------------------------|------------------------|-------------------------|
| 1 - Clock                    | 10 - Whiskey Compass   | 19 - Oil Pressure/Temp. |
| 2 - Airspeed indicator       | 11 - Turn Coordinator  | 20 - Tachometer         |
| 3 - Directional Gyro         | 12 - VOR 2             | 21 - Primer             |
| 4 - Attitude indicator       | 13 - Audio Panel       | 22 - Throttle/Mixture   |
| 5 - Vertical Speed indicator | 14 - COM / NAV 1       | 23 - Carb Heat          |
| 6 - Altimeter                | 15 - Toggle Icons      | 24 - Ammeter            |
| 7 - Annunciators             | 16 - Autopilot         | 25 - Switches           |
| 8 - VOR 1                    | 17 - E.G.T             | 26 - Transponder        |
| 9 - Avionics Master          | 18 - Ignition/Magnetos | 27 - COM / NAV 2        |

**NOTE:** Above is based on main IFR panel only. Instruments and gauges not shown include:

- Suction Indicator
- Fuel Selector
- Circuit Breakers
- Automatic Direction Finder
- OAT Indicator
- Flaps lever & Trim wheels

**DME and slaved ADF gauge not shown – this is an addition from version 2 onwards.**

## Instruments and Controls

### 2D Panel Navigation

One of the great features of this release is the intuitive interface. All pop-up windows, and view options are programmed and displayed in a logical fashion, and therefore little explanation is required in order for the user to be able to use each feature of the aircrafts panel system. Having said that, we'll explain all the main features of the panel navigation system, as well as instrument / control operation where required.

### Switching Views

Possibly the most used switching option is the VFR / IFR view toggle. Upon loading, the aircraft will display the 2D IFR Panel by default. This is perfect for performing the required checks, and tuning of instruments. But when it comes time to do the real flying (takeoff and landing) you'll want a good view of the outside world. Simply click on the dashboard to swap to & from IFR or VFR view. A large invisible spot has been created to allow quick and easy access to this trigger. So when the pressure is on, you wont be looking for a small icon or trying to manage difficult keystroke combinations.

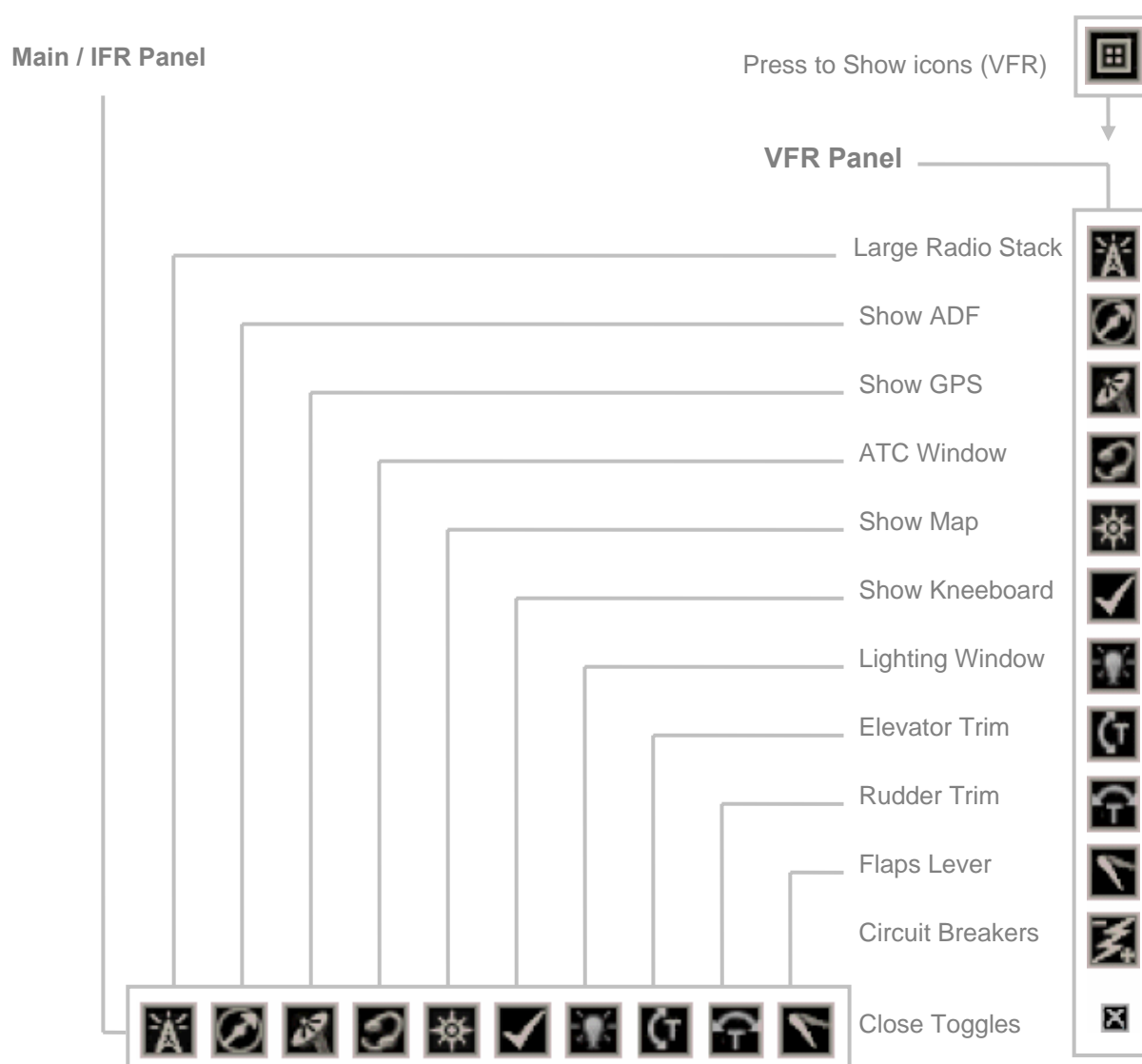


To switch between IFR / VFR views, click on the dash area.

## Window Icons

Due to the abundance of features included in this panel, many of the available instruments and gauges are hidden from initial view. On the main IFR panel you'll notice a row of icons directly above the autopilot. These provide quick and easy access to the various pop-up windows that contain these extra gauges.

When in VFR mode, the only initially visible icon has four small squares on the face. Clicking this icon will open a small window that fits snugly on the side of the radio stack with icons for all available pop-up windows. This saves the user from having to revert back to the IFR screen to perform such operations.

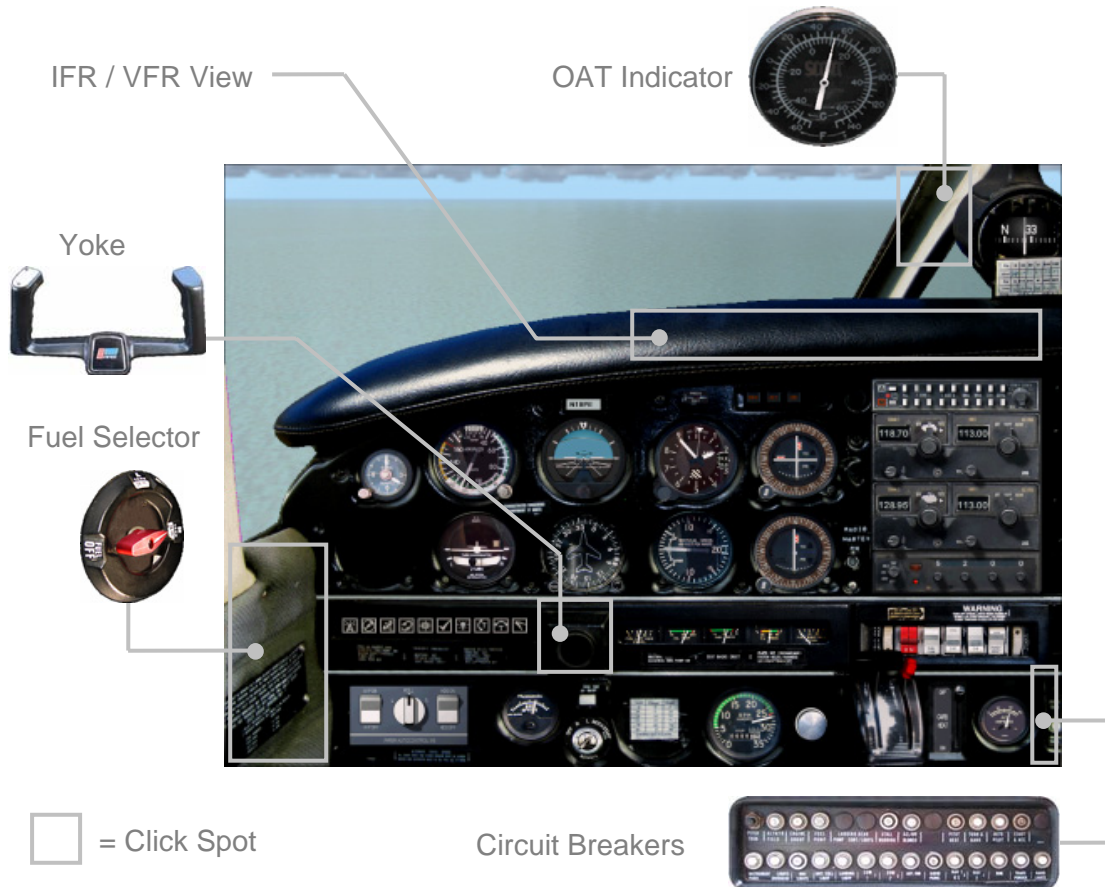


### Invisible Hotspots

Some of the available windows do not have a corresponding icon associated with them. We have used icons only where it was either not possible, or not practical to place an invisible 'hotspot' or click spot.

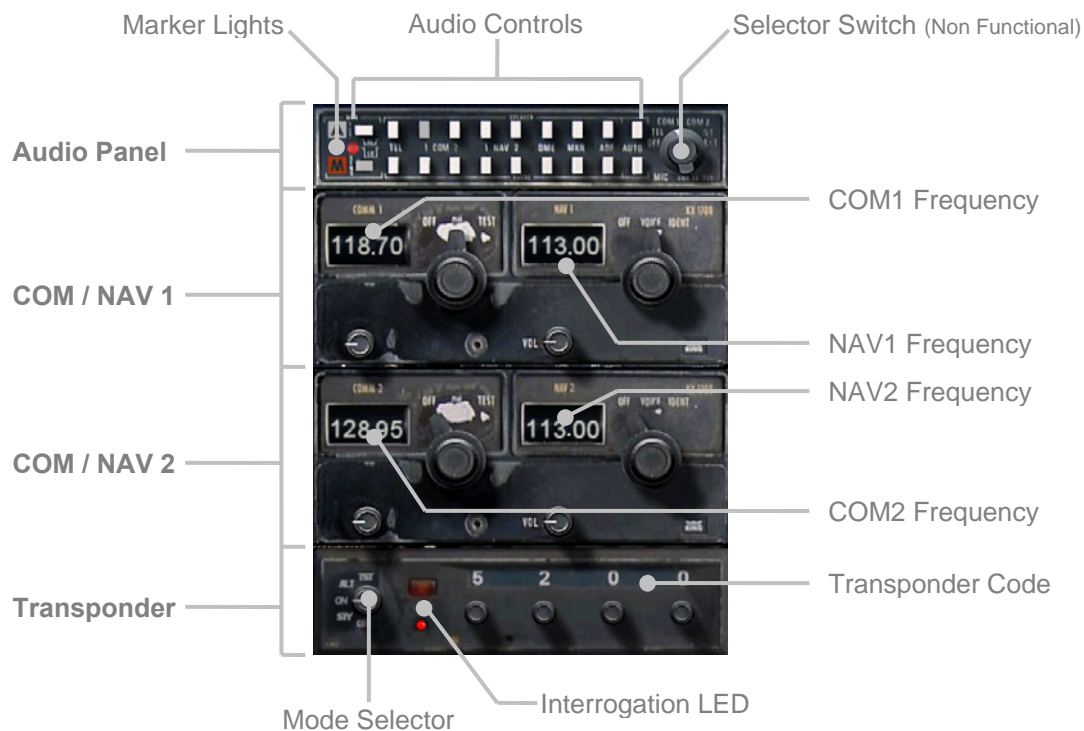
As with the IFR / VFR switching, we have used these invisible spots wherever possible, to maximise the level of realism when flying the PA28.

See below for a diagram of invisible 'hotspots' and what they control.



## Avionics

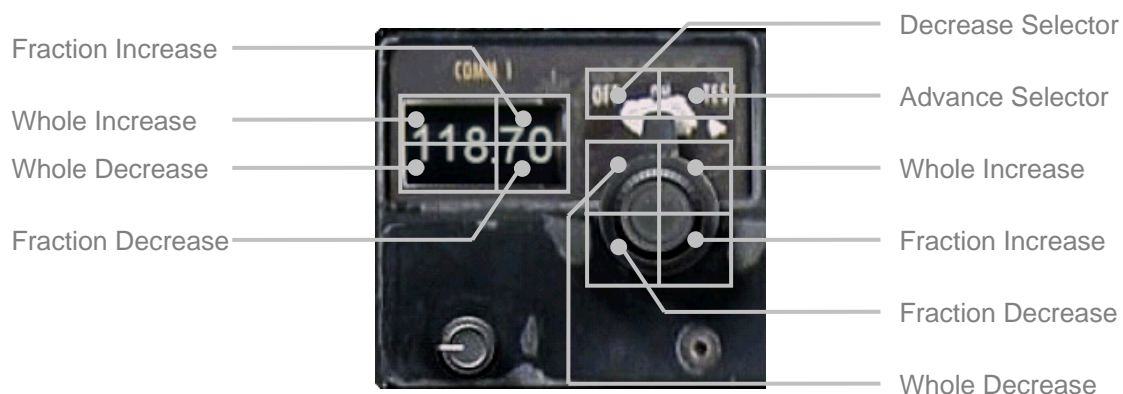
The avionics installed in the Piper Warrior II panel, consists of a couple of old Bendix/King KX175 COM/NAV Transceivers, KMA 24 Audio Panel, KT76 Transponder and a KR86 ADF. Operation of all of these instruments is relatively straight forward, and should present no problems to users. Below is a brief set of instructions of: how to adjust frequencies, effects of switches and overall operation.



## COM / NAV Radios

Adjusting the NAV / COM Frequencies is achieved either by clicking on the area over the frequency display, or the adjustment knob to the right.

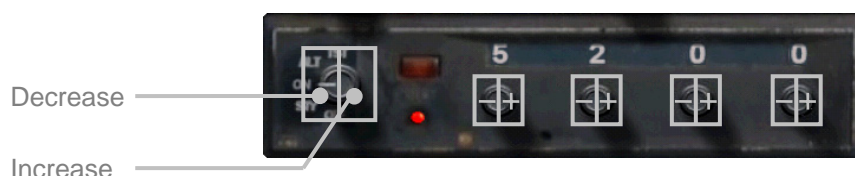
The area immediately above the selector knob, switches the COM transceiver between OFF | ON | TEST modes. These perform limited functions, and are mainly for animation purposes. If the NAV transceiver is in the off position, instruments such as VOR1 or 2 will not operate relative to the NAV radio.





## Transponder

Adjusting the Transponder code is done via the knobs below each number. The left side of each knob decreases its corresponding number, and the right increases the number. The mode selector knob, located on the left side of the unit, is adjusted in the same way as most knobs/switches on the panel. Clicking on the left side of the knob will decrease, or turn counter-clockwise. Whilst clicking on the right will increase or turn clockwise.

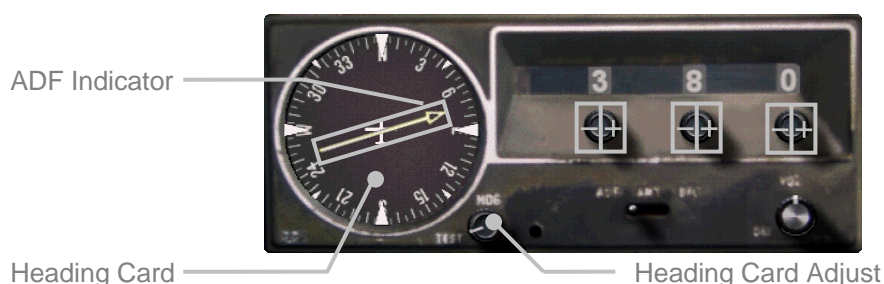


## Automatic Direction Finder

The Automatic Direction Finder (ADF) installed in the Warrior II, is of the dual tuner/indicator type. Adjustment is done in exactly the same fashion as the other avionics equipment in that clicking on the left of a knob, decreases the relative selection, and clicking on the right increases selection.

The direction indicator will point directly towards a tuned NDB (*Non Directional Beacon*) if in range, and there are no electrical or avionics problems with the aircraft.

This instrument includes an adjustable heading card. This can be very useful for navigation and is adjusted via the knob located on the lower-right of the ADF indicator.



### Tip

A useful tip is that each knob, whether it is in Virtual Cockpit mode or 2D panel mode, can be rotated by using your mouse wheel. This is especially useful for making larger adjustments. For example, when adjusting the heading bug on the directional gyro, using the mouse wheel will take a fraction of the time as it would take to click through your selection.



### Autopilot

The Warrior II includes the 'Piper Autocontrol IIIB' autopilot module. This is a very basic autopilot that performs minimum control functions. It is limited to aileron axis only, therefore no pitch control must be maintained by the pilot.

There are 3 knobs present on this gauge, and operate as follows;

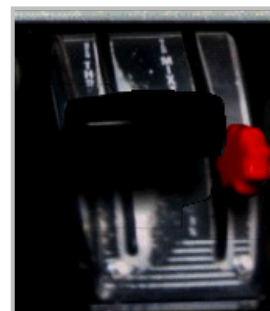
- Autopilot Master Switch  
Clicking on this switch will engage / disengage the autopilot.
- Roll Control  
When autopilot is activated, it will maintain current heading. Any aileron input by the pilot will be ignored.  
Turning the roll knob to the right (*Clicking on the right side of knob*) will initiate a 90% standard turn to the right (*starboard*) whilst the knob is turned. Releasing the mouse will return knob to the central position, and new heading will be maintained.  
Similarly, turning the knob to the left will enable the autopilot to perform a 90% standard turn to the left (port). Again, releasing the mouse button will level wings and continue on new heading.  
**\*NOTE:** *Whilst performing roll manoeuvres with the autopilot, take care NOT to move joystick during the turn, as the aircraft will react to these inputs. This is due to the limitations within flight simulator, as the roll function has been specially programmed into the gauge.*
- Heading Control  
When this function is activated (*Right side switch*) the autopilot will maintain the heading set on the Directional Gyro heading bug. Any changes to the heading bug setting will be reflected in real-time by the autopilot.



### Throttle / Mixture Control

The Throttle and Mixture controls for the Warrior II operate as one would expect. Clicking and dragging the handle of each lever will ramp up or down the selected lever.

We have also programmed the mouse wheel option into this gauge to allow minor adjustments (as low as 1% per wheel notch) This allows extremely accurate control over power and mixture settings.



## Electrical System

### Switches

Directly below the avionics / radio stack, you'll find the main switch panel. These switches control (in order) NAV Lights – Master Battery – Master alternator – Fuel Pump – Landing Light – Strobe Lights – Pitot Heat – Panel/Gauge Lights. Clicking on any switch will change its state (ON/OFF).



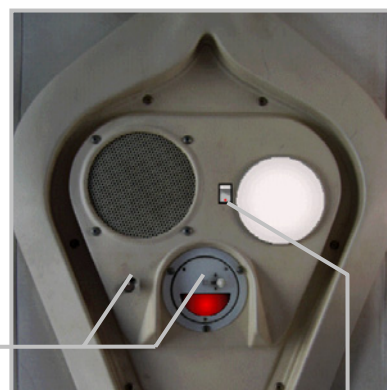
### Interior Lighting

Another original feature of this package is the interior lighting control. Clicking on the light-bulb icon will open the interior lighting window. The lower part of this window controls the traditional red panel lighting that we are all familiar with. *\*We have added a dimmer function to this light for simulation purposes, though this has no effect on the 2D or VC lighting level.*

The larger white light is the dome light, similar to that which would be in your car. Clicking on the adjacent switch will activate this light.

*\*NOTE: The effects of this light are not visible in 2D panel mode.*

*\*NOTE: Also controllable from VC.*



Red Cabin Light Control

White Cabin Light Control

## Trim Controls

### Pitch Trim

Trimming the aircraft is achieved via the pitch trim controls in either 2D or Virtual cockpit modes. The 2D pitch trim is controlled by clicking the upper or lower part of the trim wheel or using the mouse wheel over any part of the trim wheel in the 2D pitch trim window.

In Virtual Cockpit mode, you can control trim in the same way, with the additional feature of being able to “Click and drag” the wheel in either direction.

**\*NOTE:** Current amount of trim is indicated in the 2D pitch trim window.



2D Pitch trim



Virtual Cockpit Pitch

### Rudder Trim

Trimming the rudder is achieved via the rudder trim controls in either 2D or Virtual Cockpit modes. The 2D rudder trim is controlled by clicking on the left or right side of the adjustment knob. Virtual Cockpit rudder trim is controlled in the same way, with the addition of being able to “Click and drag” the knob.

**\*NOTE:** Trim position indicator is located in the 2D rudder trim window only.



2D Rudder trim



Virtual Cockpit Rudder trim

**\*NOTE:** The Warrior II is not fitted with Aileron trim

### Flaps Control

Extending / retracting flaps is performed via either the 2D flaps pop-up window, or the Virtual Cockpit flaps lever.

In 2D mode, click the upper end of the flaps handle to extend flaps (1 click = 1 stage of flap) and clicking on the lower end of the lever retracts flaps incrementally.

In Virtual Cockpit mode, to extend or retract flaps, click on the lever and drag the mouse up or down.



VC Flaps lever



2D Flaps lever



### Tip

You can jump between flaps and pitch trim windows in 2D panel mode by clicking on either the trim wheel, or flaps lever.

For example, when flaps window is open, clicking on the trim wheel will close flaps window and open pitch trim window and visa versa.

### Warning Lights

There are three basic warning lights located on the upper part of the Warrior II panel. These are; VAC – Vacuum Warning, ALT – Alternator Warning, OIL – Oil Temperature/Pressure Warning.

On the left of these indicators is a switch labelled “Press to test”. Clicking this switch will illuminate the three lights for a period of approximately 3 seconds. This is to ensure that all lights are in working order prior to commencement of flight.



### Other Instruments

The remaining instruments in the Warrior II require no extended explanation. Even though each gauge has been programmed from scratch, they still operate as one would expect. Some features that are noteworthy however are:

- True Airspeed calibration (Airspeed Indicator)
- Pitch bar adjustment +/- (Attitude Indicator / Artificial Horizon)
- QNH Adjustment (Altimeter)
- Magnetic Correction (Directional Gyro)
- Heading bug adjustment (Directional Gyro)
- Engine Primer (Must be pumped > 3 times for cold start)
- Lighting (Using keyboard short-cut for landing lights will not work as expected, this is due to the use of the landing light tag for the VC gauge backlighting. Taxi light has been used in place of the landing light.)
- Virtual Cockpit Sun visors – Click on either sun visor in VC mode to raise / lower.
- Virtual Cockpit Cabin Air – Click on the Cabin Air Lever in VC mode for aft seating air conditioned air (animation only)
- Virtual Cockpit Exit – Clicking on either exit handle in VC mode will open / close the main exit.
- Virtual Cockpit Storm Window – Clicking on the storm window latch in VC mode, will open / close this window. (Don't forget to yell “CLEAR PROP!”)
- Slaved ADF indicator – this is simply a stand alone ADF indicator which displays exactly the same ADF data as the avionics mounted version, however, it's placed within easy sight of the pilot from 2D of 3D viewpoints.
- Analogue DME gauge – we have modelled an accurate analogue DME gauge after popular request. This gauge is slaved to NAV1 and will read distance in Nautical miles. When the button is pressed and held, (lower right) DME speed is displayed on the adjacent scale.



## Aircraft Control Panel

The Australian Simulation Piper Warrior II version 2 and above, has a new addition, the “ACP” window. This is a small window that represents an in game version of the Aircraft Control panel Software that ships with this package.

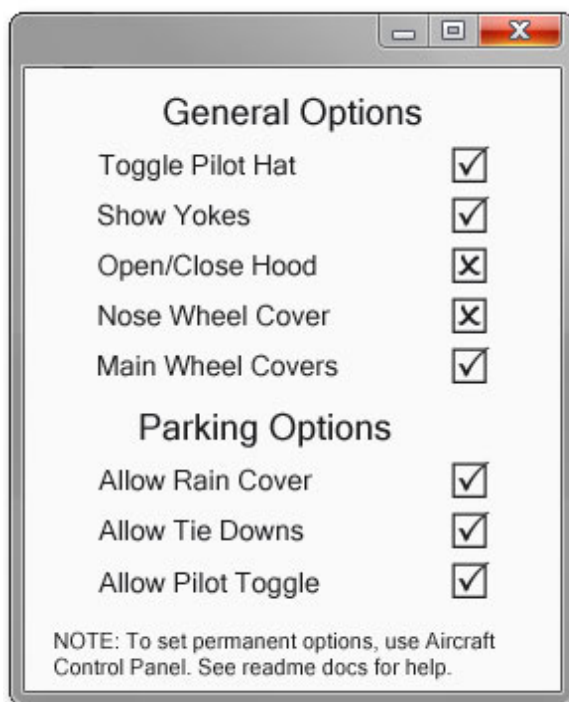
This allows real-time control over the same variables as are available in the Aircraft Control Panel program. The changes you make during your flight are only saved for that particular flight. As soon as you reload the aircraft, or load another aircraft, the changes you made in the “in-game ACP” will be lost.

To make permanent changes to these options, use the Aircraft Control Panel program instead.

To open the in-game ACP window, you can either select it from your “Views → Instrument panel” menu by selecting the ACP menu item, or you can use the keyboard shortcut SHIFT+4.

To make a change, simply click the checkbox that is adjacent to any item. Your change will be made instantly, and the checkbox will display a tick or an X depending on your selection.

NOTE: This window will always load the changes saved from the Aircraft Control Panel program.



The in-game ACP window

## VC Yoke Switching

Another new feature in the Australian Simulation Piper Warrior version 2.0 and above, is the ability to switch visibility of the VC yokes in real-time. You'll agree that this function greatly improves the usability of the cockpit in VC mode.

For example, try turning the ignition key when the yokes are visible... it's a camera adjusting nightmare!

In the Warrior II cockpit, simply click the panel extensions from which the yoke poles protrude. Left clicking this area will switch the visibility of the yokes instantly. You can also use the in-game ACP window, though this method is slightly cumbersome.



Now you see them...

Left-Clicking the areas shown will switch the visibility state of the Yokes.

As you pass the mouse cursor over these areas, the cursor icon will change to a hand.

NOTE: The in-game ACP window will display the current status of yoke visibility in real-time, so if you change the visibility using the click-spots show here, the ACP window will update itself automatically.



Now you don't!

## FS-X Cameras

Flight Simulator-X™ users have a few extra features available to them by using the new camera system. The Australian Simulation Piper Warrior comes pre-loaded with a whole host of additional camera views for both the external 3D model and the virtual cockpit.

To cycle through these views, press the “A” key, or “SHIFT+A” key combination to cycle either forwards or backwards.

NOTE: The above assumes that you haven’t changed the default keystrokes for the alternate camera view system.

The views available are as follows:

### External Views –

- **Right Wing Cam**  
Camera is positioned just behind the right wing, looking towards the cockpit.
- **Left Wing Cam**  
Camera is positioned just behind the left wing, looking towards the cockpit.
- **Tail Cam**  
Camera is positioned immediately behind the vertical stabiliser looking forward across the top of the aircraft.
- **Gear Cam**  
Camera is positioned immediately behind the right landing gear looking forward.
- **Nose Cam**  
Camera is positioned immediately behind and above the prop spinner, with a zoom level of 0.3, giving a wide field of view.
- **Reverse Nose Cam**  
Camera is positioned in front, and to the right of the nose section, looking back towards the cockpit.



#### Internal / VC views –

- **Default view**  
This is the standard view from the pilots seat.
- **Co-pilot, or passenger view**  
This is the same as the default view, except you are positioned in the right hand seat.
- **Engine Controls**  
This view places the camera directly in front of the throttle and mixture levers. This view also provides an excellent view of the switch panel, tachometer, DME gauge, ignition switch, ammeter and fuel/oil instruments, as well as the park brake, carb heat switch and rudder trim.
- **Centre Console**  
This places the camera immediately above the flaps and elevator trim console.
- **Avionics**  
Here we can see a great view of the radio stack, ADF and the VOR 1 & 2 gauges.
- **Main instruments**  
This view places the camera low on the panel, directly in front of the main instruments and provides an excellent way of practicing IFR training.
- **2D panel system**  
The final position in the cycle, displays the standard 2D panel system. We would recommend doing all your flying from the Virtual Cockpit though, as every function that is available in 2D mode, is also available in VC mode.

## 6 – Warrior III cockpit



## Instruments and Controls

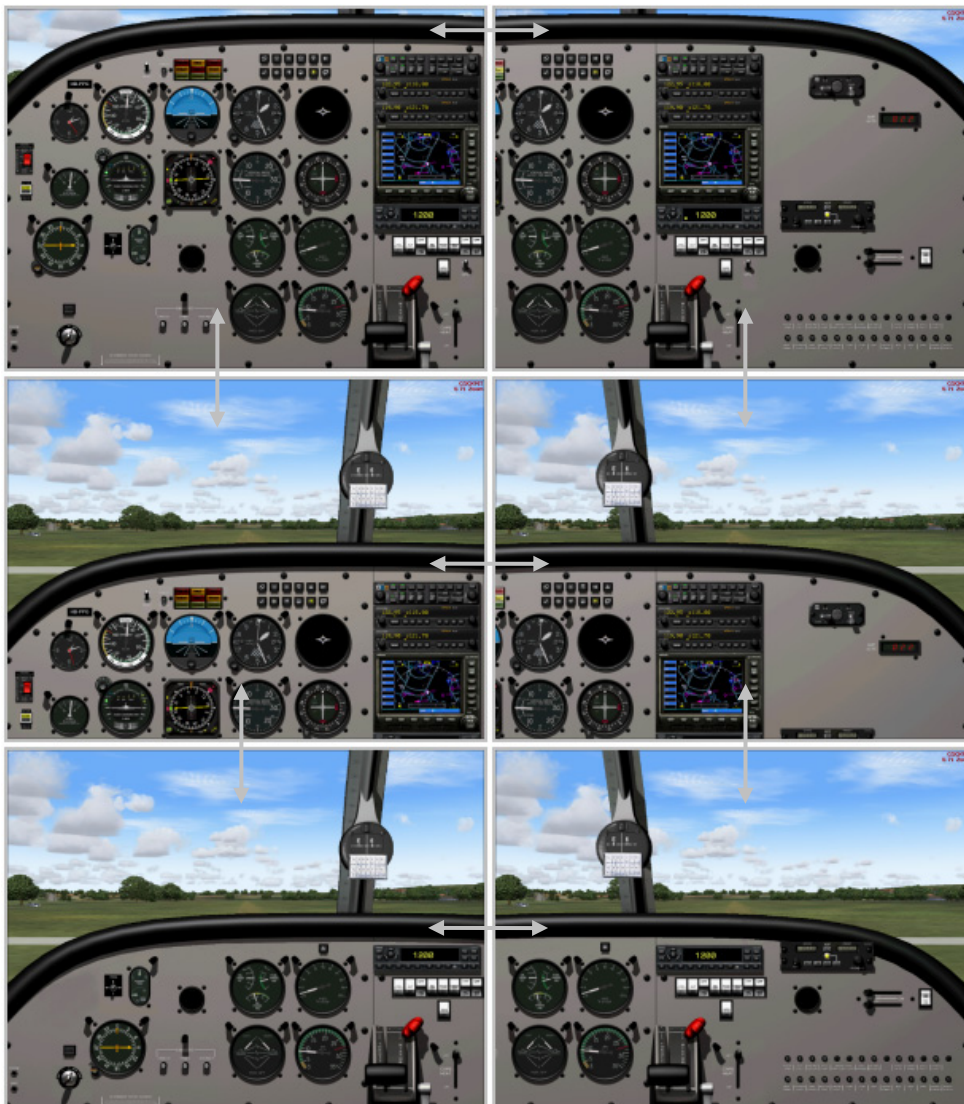
### 2D Panel Navigation

As with the Warrior II, the Warrior III interface has been designed to be intuitive. Navigating through the various views is a simple process, involving only clicking the relevant button. We felt that the design philosophy we implemented on the Warrior II panel was not entirely complimentary to the new look Warrior III panel. So we created animated navigation buttons which remain uniform throughout the various views in this aircraft.

### Switching Views

The Warrior III panel consists of four main views, IFR Pilots view (default) IFR Co pilots view, VFR Pilots view and VFR Co Pilots view. Among these are various pop-up windows allowing access to the various controls and instruments that don't fit well onto the active

Scroll through views via arrow buttons



### Window Buttons

For this aircraft, we have created a series of push-buttons for toggling the various pop-up windows, and views that are available to the pilot. Looking at any of the buttons should be enough to determine what they do, but the table below explains each one individually.



### Avionics

Possibly the most advanced feature of this aircraft package, is the avionics installed in the Warrior III. Featuring a full suite of Apollo / Garmin Avionics consisting of a GMA340 Audio panel, two SL30 COM / NAV Transceivers, a Garmin 500 GPS, a GTX-327 Transponder and a Becker 3500 ADF Transceiver.

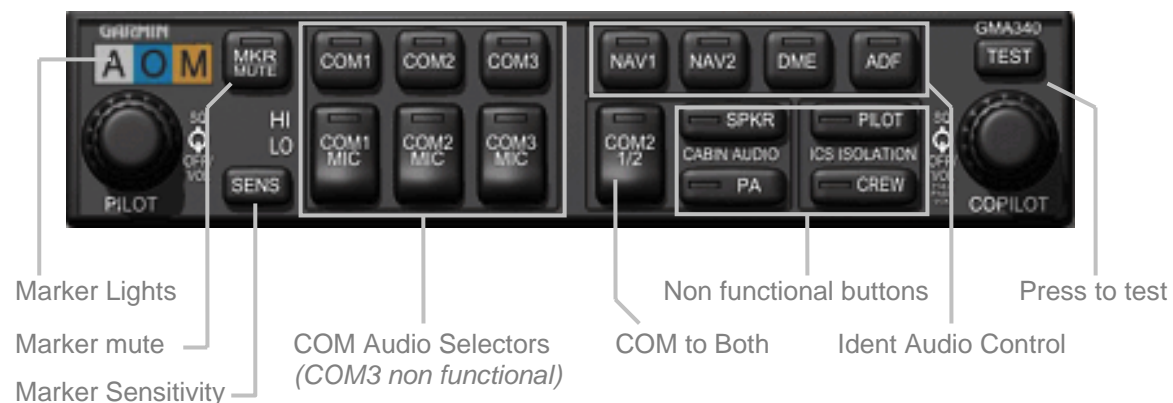


## Operation

### Garmin GMA-340 Audio

The Garmin GMA 340 Audio panel is one of the most advanced of its type. Featuring Outer, Middle and Inner marker lights as well as audio control for all installed avionics. Flight Simulator has no facility for every feature available to this instrument, however, all buttons and LED's have been programmed to be interactive.

For example, the marker beacon sensitivity is non-functional in Flight Simulator, but the corresponding button clicks and sensitivity LED's have still been programmed so as to appear to be fully functional.



Each button on this gauge has been programmed to be interactive, regardless of whether there is any real function performed. When the mouse is clicked on a button, the button will animate. The button will appear in for the duration of the mouse click. The associated LED for each button will also illuminate / extinguish for every mouse click.

### Button functions

- MKR|MUTE**  
 When the button LED is illuminated, you will not hear marker sounds, however the AOM lights will still work as normal. To mute, press once, to unmute, press again.
- SENS**  
 This button controls the marker sensitivity LED's. Each press swaps between HI / LO.
- COM1 / COM1 MIC**  
 These buttons have been programmed to act as one in terms of their operation. A mouse click will set audio to COM1
- COM2 / COM2 MIC**  
 Sets Audio to COM2
- COM3 / COM3 MIC**  
 Animation only, no Flight Simulator function.
- NAV1**  
 Sets audio to NAV1 Ident.
- NAV2**  
 Sets Audio to NAV2 Ident.
- DME**  
 Sets audio to Tuned DME Ident.
- ADF**  
 Sets Audio to ADF Ident.
- TEST**  
 Pressing this button tests all LED's.
- COM2 1/2**  
 Sets COM Audio to receive BOTH.
- SPKR**  
 Animation and LED only.
- PA**  
 Animation and LED only.
- PILOT**  
 Animation and LED only.
- CREW**  
 Animation and LED only.

### Apollo SL30 NAV/COM

The Apollo SL30 COM/NAV Transceiver(s), produced by Garmin, are extremely versatile. Despite their size, they boast an excellent range of features, all of which have been programmed into these gauges in way or another.

It is important that this section of the manual be understood, in order to get the most out of these advanced avionics.



### Modes overview

The SL30 has two main modes of operation, COM Mode, and NAV Mode. Put simply, when in COM mode, the Active and standby frequencies displayed are the COM (*Communications*) frequencies. Similarly, when in NAV mode, the frequencies displayed are the NAV (*Navigation*) frequencies.

The current mode is indicated via the small LED (*Light emitting diode*) located directly above the COM, NAV, SYS and OBS buttons.

Following is a brief description of each mode.

- **COM MODE**  
Radio is currently displaying Communication frequency information. Communications frequency can be adjusted **ONLY** in this mode.
- **NAV MODE**  
Radio is currently displaying Navigation frequency information. Navigation frequency can be adjusted **ONLY** in this mode.
- **SYS MODE**  
This is the System mode. Whilst in this mode, the radio set performs a continuous loop of self tests, no information is displayed on screen during this time. To exit, simply select either COM or NAV modes.
- **OBS MODE**  
This mode is only available if it is selected whilst in NAV mode. The radio has been wired to both the H.S.I (*Horizontal Situation Indicator*) and VOR2 (*Variable Omni-Range*), allowing OBS radial information to be displayed on the extreme right window of the SL30 radio. If an active VOR is tuned, a graphical CDI bar (*Course Deviation indicator*) will be displayed, as well as TO/FROM station information.  
See later in this document for detailed information about OBS mode.

**NOTE:** Each mode is accessed by pressing the associated mode button.



### Basic Operation COM / NAV mode

By default the Apollo SL30 COM/NAV Transceiver(s) will start in COM mode. This is indicated by a small LED (*Light*) above the COM button. The current active frequency is displayed on the far left, while the standby frequency is displayed to the right. The standby frequency has a small “s” next to the frequency to indicate standby status.

### Adjusting / Setting COM & NAV Frequency

Adjusting and setting the COM or NAV frequency is a simple task.

**\*NOTE:** The frequency that is adjusted is actually the *STANDBY* frequency, once desired frequency is set in the standby window, simply press the *FLIP-FLOP* button to set as active frequency.

Simply click on the areas indicated in the diagram to the right to adjust frequency. You can make the adjustment from either the standby frequency window, or the knob located on the far right of the SL30 gauge.

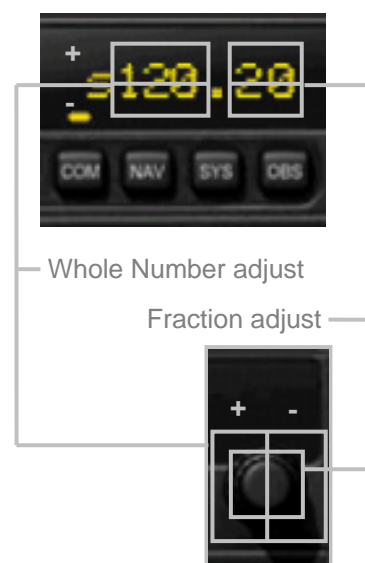
Once the frequency is adjusted to the desired setting, press the *FLIP-FLOP* button to set to active frequency.

### TX Symbol

To save the frequency, simply press the **SEL** button.

(This is the button immediately to the left of the *ENTER* button, and is known as the *SELECT* button.)

Once you have pressed the button, the standby frequency is saved to this location... it really is as simple as that!



**\*TIP:** You can also use the mouse wheel to adjust the frequency.

### Advanced Operation COM / NAV mode

The SL30 NAV/COM transceiver has many advanced options built into the gauge. Following is a description of each function, and its method of operation.

### COM / NAV Memory Functions

The SL30 NAV/COM transceiver has 10 memory locations for storing frequencies, 5 are reserved for COM frequencies, and 5 more are reserved for NAV frequencies. These memory locations all have names associated with them to allow logical saving and recalling operations, as well as making them relatively easy to remember. The save location names are as follows:

#### COM MEMORY

- **ATS** (*ATIS*)
- **ATC1**
- **ATC2**
- **GND** (*GROUND*)
- **TWR** (*TOWER*)

#### NAV MEMORY

- **VOR1**
- **VOR2**
- **VOR3**
- **ILS1**
- **ILS2**



### Storing a frequency

Saving a frequency for later use is a relatively simple task; simply follow the instructions below to store a frequency to a memory location in either COM or NAV mode.

The example we use is to store several COM frequencies for Meigs field airport located in Chicago, U.S.A. We will then recall some of these frequencies setting one to active, and readying another in the standby window.

Following this example, will teach you to use the store and recall feature in either COM or NAV mode easily.

Load up your simulator and go to Meigs field (KCGX), select any variation of the **Australian Simulation Piper Warrior III**. In either VC or 2D panel mode (*we recommend, 2D panel, with the large Radio Stack window opened*) focus on COM/NAV1 and ensure the radio is in COM mode.

First we will save the local ATIS frequency to the ATS memory location.

Set the standby frequency to **127.35** and then press the **ENT** button. (*This is the button on the extreme right, and is known as the ENTER button*)

After pressing this button, you will see the “STORE AS” message appear in the right window, followed by “ATS”.

Because “ATS” is the first available memory location, and this is a logical name for the current frequency, we’ll save our standby frequency to this location.



To save the frequency, simply press the **SEL** button. (*This is the button immediately to the left of the ENTER button, and is known as the SELECT button.*)

Once you have pressed the button, the standby frequency is saved to this location... it really is as simple as that!

But while we are here, we’ll also save the aerodrome’s ground frequency.

Back to the standby frequency, we can now set: **121.80** which is KCGX Ground. If “STORE AS” is not already displayed, click the ENT button once. We have already used the “ATS” location, and we don’t want to overwrite it, so we’ll select the “GND” location for this frequency.

To select the GND save location, we need to scroll through the list of available memory locations by clicking on the right or left side of the knob (extreme right) or the left/right side of the memory name label.

Scroll through until you see “GND” displayed on the right side window, and press ENTER.



**\*TIP:** You can use the mouse wheel to scroll through save names.

### Recalling a frequency

Now we have successfully saved two frequencies, we will now recall them from memory. Upon recalling the desired stored frequency, the **SL30** will enter the recalled frequency into the standby window.

\*Before continuing, please ensure you have exited the SAVE mode. If you see “STORE AS” in the right window, simply press **ENT** to exit save mode.

Assuming we are still in COM mode, press the **SEL** button, you will see “RECALL”, followed by “ATS”.



To recall the frequency we saved in the ATS location, press **ENT**. This will enter the Meigs Field ATIS frequency into the standby window.



Now press the **FLIP-FLOP** button to set this frequency as active.

While we are still in RECALL mode, we'll set the frequency we saved in the **GND** memory slot as the standby frequency.

Scroll through the RECALL NAME list until the **GND** slot is displayed. Once you have done this, simply press the **ENT** button, and the KCGX Ground frequency will be entered in the standby window.

Press **SEL** again to exit RECALL mode.



Now we have saved and recalled two frequencies, these frequencies will remain in their saved locations until they are overwritten, or you exit flight simulator.

Saving NAV frequencies is done in exactly the same way as above. Any frequency can be stored to any location; the naming convention used is merely a guide as to what you intend to save/recall. Just because the save name is called ATS, you don't have to enter an ATIS frequency. Just remember what you store and where.

You are probably already imagining the benefits of using this feature, prior to commencing a cross-country flight, you can store all the COM and NAV frequencies that you'll need before you leave the ground, leaving you more time to concentrate on flying the aircraft.

With the two SL30's installed in the Warrior III, you have a total of 20 memory locations available.

## Advanced Options (NAV MODE)

### OBS MODE

OBS mode is actually a sub-mode of NAV mode. This means that it is only accessible from NAV mode. Pressing the OBS button in any other mode will have no effect. Once in NAV mode (*enter NAV mode by pressing the NAV button*), tune an active VOR, and set as active frequency.

In the example below, we have tuned O'Hare International airport (*Chicago, U.S.A*) VOR as NAV1 active frequency. We have also set our H.S.I. (*Horizontal Situation Indicator*) to course **326**.

Pressing the **OBS** button on the SL30 will display the following information:

- Course Setting
- TO / FROM Station data
- Graphical CDI (*Course Deviation Indicator*)



Bear in mind that this example applies specifically to COM/NAV-1. For COM/NAV-2 we would use the VOR-2 gauge.



As we intercept the 326 radial from the tuned VOR, the CDI bar moves into the centre just like on the H.S.I.

To exit OBS mode, press the **OBS** button, or the **COM** button.

## Advanced Options (T/F MODE)

### T/F MODE

T/F mode is also a sub-mode of NAV mode. This means that it is only accessible from NAV mode. Pressing the **T/F** button in any other mode will have no effect.

Once in NAV mode (*enter NAV mode by pressing the NAV button*), tune an active VOR/DME, and set as active frequency.

Continuing on from the previous example, we have tuned O'Hare International airport (*Chicago, U.S.A*) VOR/DME as NAV1 active frequency.

**T/F** mode has 3 sub-modes, each time the **T/F** button is pressed the SL30 will display the following information:

1. Bearing TO VOR station
2. Radial FROM VOR station
3. DME data (*Distance Measuring Equipment*)

**\*NOTE:** If tuned station is not active, or signal strength is too weak, the display will read "VOR" followed by "- - -". The DME data will also show "- - -" where numerals would normally be displayed.

Signal strength insufficient for resolving data accurately, or active frequency not a VOR.



First press **T/F** button. VOR text replaced with tuned station IDENT name, bearing TO station shows 325 degrees.



Second press **T/F** button. Tuned station ident name, radial FROM (**FR**) tuned station shows 145 degrees.



Third press **T/F** button. DME data is displayed. (see below)



DME data can be broken down into three areas. 1) Distance TO/FROM station (*displayed in Nautical Miles*) 2) Current speed TO/FROM station (*displayed in Knots*) 3) Estimated time of arrival at station (*displayed in hours:minutes*).

To exit T/F mode, press T/F button a fourth time.

## GTX-327 Transponder

### Overview

Not to be topped by the other avionics installed in the **Australian Simulation Piper Warrior III**, the Garmin GTX 327 Transponder also features many advanced options. These include Altitude data, flight time counter, count-up and count-down timers.



 Reply symbol. This flashes during interrogation from ATC radar.

### Basic Operation

#### Adjusting Squawk Code

The most basic facet of operation of the transponder is adjusting the squawk code. This is done in much the same way as adjusting the frequency of the COM/NAV radios in that clicking the upper part of each number will increase that number, while clicking the lower half of the number will decrease that number. *See below.*



### Basic Functions

The buttons located on the upper-left area of this instrument control the basic functions of the transponder. Some need no explanation, such as the **ON & OFF** buttons, but others require some brief explanation to ensure the user understands what the instrument does.

- **IDENT** - Displays IDENT on the upper-left corner of the LCD screen.
- **VFR** - Sets the squawk code to 1200 (*use this setting while flying circuits, or not under ATC control, and set STBY*)
- **STBY** - Used in conjunction with VFR mode, use this mode when not under ATC control. (*STBY is displayed on the left of screen*)
- **ALT** - Allows transmission of Altitude data when transponder is interrogated by ATC radar. (*ALT is displayed on left of screen*)



## Advanced Operation

### Function Modes

The FUNCTION button located to the upper-right corner of the transponder controls several advanced options. Each time the FUNCTION button is pressed, the transponder scrolls through the following modes:

- **FLIGHT TIME**  
The GTX327 transponder has a built in flight timer that is activated by airspeed. This allows the FLIGHT TIME display to only time actual time in the air. If you land, the flight timer will stop, until you next take-off.
- **Pressure Altitude**  
This is a digital read-out of the current pressure altitude, displayed as Flight Level. For example, for 10,000 feet, the FL reading is FL100.
- **COUNT UP**  
This is simply a user controlled timer that can be started, stopped and reset at user's discretion. See later in this chapter for details.
- **COUNT DOWN**  
Just with the count up timer, this timer can be set to desired starting number, started, stopped and reset at user's discretion. *(See later in this chapter for details.)*



The **FLIGHT TIME** display cannot be started or stopped manually, however it can be reset to zero during flight if need be. When the transponder receives a signal that the aircraft is in the air, the flight timer starts counting up. If the aircraft is detected to be on the ground, the timer will pause until next lift off.

Should the timer be required to be reset at any time, press the **CLR**(CLEAR) button. Time format used by the transponder is: HH:MM:SS (*Hours:Minutes:Seconds*)



The **PRESSURE ALT** screen displays current pressure altitude, displayed as Flight Level. In the example above, the pressure altitude reading is 4,100 feet.



The **COUNT UP** timer is a manually controlled timer. When first selected, the time count will be at 00:00:00. To start timer, press the **START/STOP** button, and press again to pause/stop the timer.

To reset display to zero, press the **CLR** button.

**\*NOTE:** You may start the timer and continue scrolling through function modes at will. There is no requirement to be in any particular mode for a function to operate correctly.



The **COUNT DOWN** timer is also a manually controlled timer. When first selected, the time count will be at 00:00:00. The difference with this timer is that before you can count down from a specific number, you must first enter that number into the transponder.

To enter the number, first ensure you are in count-down mode, by pressing the **FUNCTION** button until “**COUNT DOWN**” is displayed on the screen.



Once in **COUNT DOWN** mode, pressing the **CURSR** (*Cursor*) button, located on the upper-right corner of the transponder, will highlight an individual number location for each press of this button. For example, to select the fourth number from the left, or 10 minute number, press the **CURSR** button three times. The highlighted number is indicated by a cursor located at the base of the currently selected number.



Once the appropriate number is selected, press the desired number to enter that number to the selected location using the number pad along the bottom of the transponder. In the example below, we have entered 30:00 minutes, by selecting the 10 minutes location, then pressing the **3** button.



To commence the countdown, simply press the START/STOP button.



The timer can be paused at any time by pressing the START/STOP again.

To reset the timer to zero, press the **CLR** button.

When the COUNT DOWN timer reaches zero, the transponder will replace the COUNT DOWN display with “**EXPIRED**” and commence counting up. Should the user miss the zero mark, this allows the pilot to calculate how far past their mark they have flown.

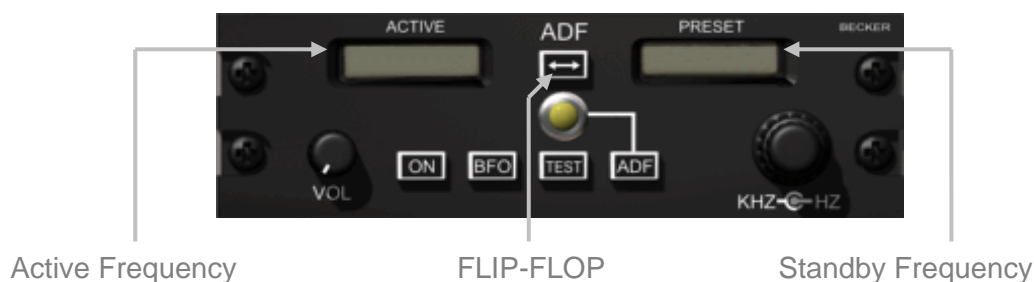




## Becker 3500 ADF

### Overview

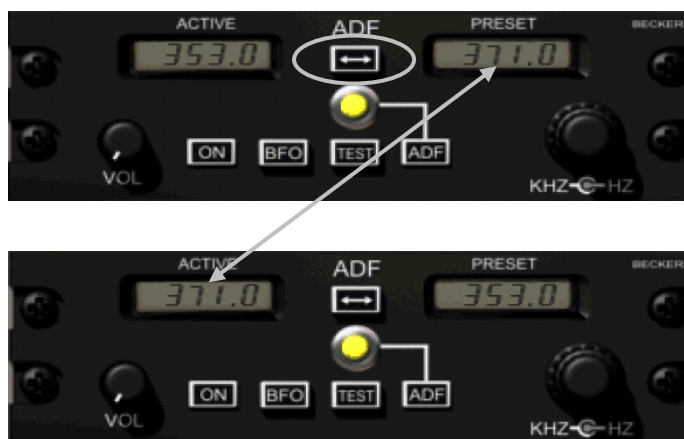
The Becker 3500 ADF transceiver is not the most common ADF available on the market, but that's not to say it isn't the best. There are no overly advanced features in this unit, except perhaps the fact that it supports standby frequencies, as with the SL30 com/nav transceivers.



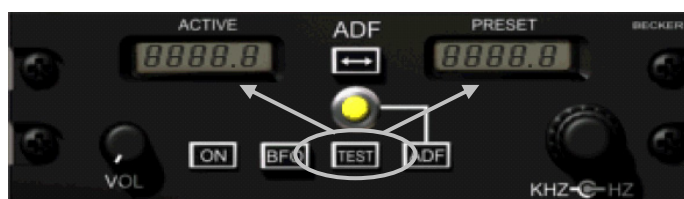
### Adjusting / Setting Frequency

Adjusting the frequency for the Becker 3500 ADF is exactly the same as with the SL30 COM/NAV transceiver(s). Only the STANDBY frequency may be adjusted, and adjustment is made by clicking on the upper half of each number to increase selection, or lower half of number to decrease selection. Using the mouse wheel is a quick and easy way to adjust frequency.

Once adjustment has been made, press the **FLIP-FLOP** button to set as active frequency.



Pressing the **TEST** button will simulate test mode on the ADF, whilst button is pressed, the LCD screen will replace frequency numbers with a series of 8's.



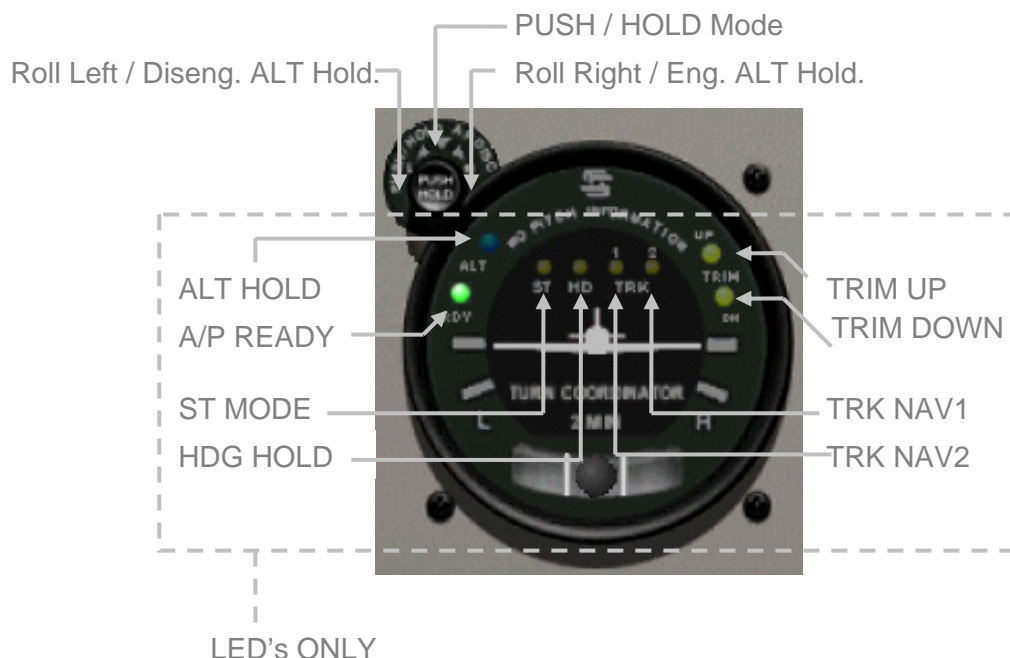
## Autopilot

### Overview

The **Australian Simulation Piper Warrior III** is fitted with an “S-TEC” Series Thirty Autopilot. This fantastic piece of equipment is a combined Autopilot/Turn coordinator. Wired to the installed “Meggitt Avionics/S-TEC” ST-180 H.S.I and MD-200 CDI (VOR2), as well as a pitch and aileron servos, this deceptively simple looking piece of equipment performs some outstanding functions.

With four main modes, being **ST** (Stabilizer), **HD** (Heading Hold), **TRK 1 & 2** (Nav1/2 Track) as well as **ALT** (Altitude hold, available only in HD or TRK mode), the Series Thirty Autopilot can control the aircraft as well as the most advanced equipment available today, as well as provide turn and bank information, all in a small self contained unit.

### Controls / Indicators



### Operation

The single button / knob present on the S-30 autopilot provides access to all available options. Each press of the “**PUSH HOLD**” button moves the autopilot to the next mode. All modes loop in the following order: **ST** → **HD** → **TRK1** → **TRK2** → **ST** etc.

Switching the autopilot **ON**, is done by holding the **PUSH HOLD** button down for at least 3 seconds. After this time, you will see all 8 LED's illuminate for a period of 7 seconds, in which time, the autopilot performs a series of self-tests.

After the 7 second test period has expired, the autopilot is **ON**, and in **ST** mode.

To switch **OFF** autopilot, depress the **PUSH HOLD** button for a period of at least 3 seconds. You will hear the audio alert that signifies the autopilot disengaging, and all LED's except the **RDY** will extinguish.

## Modes

### ST Mode (*Stabilizer*)

**ST** or Stabilizer mode is the default mode for this autopilot. After the 7 second test period has expired upon switching A/P on, ST mode will be active.

**ST** mode levels the wings to maintain current heading.

**\*NO ALTITUDE HOLD IS AVAILABLE IN ST MODE**

During operations in ST mode, the pilot can use the **ROLL** function to change heading. Turning the knob in either direction will initiate approximately 90% of a standard (2 MIN) turn in the direction of the knob. For example, turning the knob to the right will cause the aircraft to turn right for as long as the knob is held in place. To cease turning maneuver, simply release knob (*release mouse button*) and the aircraft will return to the leveled wings attitude.

When in **ST** mode, the LED directly above the ST symbol on the face of the gauge will be illuminated.

**HD** or Heading mode allows the autopilot to maintain the current heading set on the H.S.I heading bug. Any changes in heading bug setting will automatically be reflected by the autopilot.

When in HD mode, the LED directly above the HD symbol will be illuminated.

**TRK (1&2)** or Track mode allows the autopilot to track the current course as set on either the H.S.I or VOR-2. **TRK-1** will follow course set on H.S.I, and **TRK-2** will follow course set on VOR-2.

The Series thirty will automatically intercept Radials with a high degree of accuracy.

**ALT** or Altitude hold mode allows the autopilot to hold the desired altitude. **ALT** mode is NOT available in **ST** mode, however it is available in all other modes.

Setting altitude and activating **ALT** mode, is done by turning the **PUSH HOLD** knob to the right when at the desired altitude.

When activated, the blue LED above the **ALT** label will illuminate, and the aircraft will begin to trim (*if required*) automatically.

Should changes in attitude, power, thrust etc cause an increase/decrease in altitude, the S30 will use the electric trim to acquire the set altitude.

During this time, the TRIM LED's will illuminate, indicating what the autopilot is doing. If UP TRIM is required, the S30 will initiate the trim, and illuminate the **TRIM UP** LED.

**\*NOTE** when scrolling through modes, **ALT** hold will be turned off when **ST** mode is entered.

When performing **ROLL** function in **ST** mode, be careful to not input joystick movements during the turn.

## Electrical System

### Circuit Breakers / Protection

We have attempted to recreate the electrical system in the Warrior III as much as the parent application allows. Almost every single circuit breaker allows operation of the corresponding equipment.

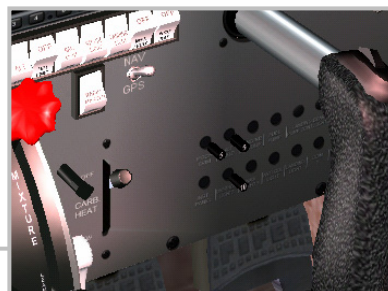
To switch OFF/ON circuit breakers, simply click on each switch, clicking again will reset.

**\*NOTE:** Circuit breakers are also available in Virtual Cockpit mode.



2D

Virtual Cockpit



### Switches

Directly below the avionics / radio stack, you'll find the main switch panel. These switches control (*in order*) Master Battery – Alternator – Fuel Pump – Navigation Lights – Strobe Lights – Landing Light – Pitot Heat. Below these are the Avionics Master Switch, and the NAV/GPS switch. The latter will slave the H.S.I to the GPS course/track. Clicking on any switch will change its state (*ON/OFF*).



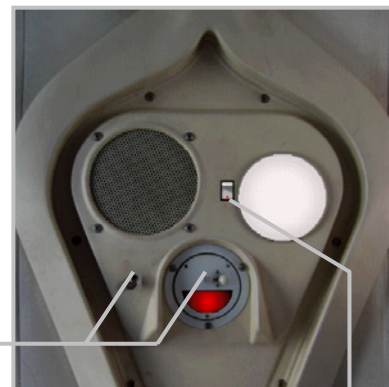
### Interior Lighting

Another original feature of this package is the interior lighting control. Clicking on the light-bulb icon will open the interior lighting window. The lower part of this window controls the traditional red panel lighting that we are all familiar with. *\*We have added a dimmer function to this light for simulation purposes, though this has no effect on the 2D or VC lighting level.*

The larger white light is the dome light, similar to that which would be in your car. Clicking on the adjacent switch will activate this light.

**\*NOTE:** The effects of this light are not visible in 2D panel mode.

**\*NOTE:** Also controllable from VC.



Red Cabin Light Control

White Cabin Light Control

## Trim Controls

### Electric Trim

Trimming the aircraft is achieved via the electric trim controls in either 2D or Virtual cockpit modes. Simply click on the direction that you wish to trim the aircraft. Click repeatedly for greater trim movement.

The X axis (L/R) controls rudder trim, and the Y axis (U/D) controls pitch trim.

The trim position indicator will instantly reflect any changes in trim tab position.

**\*NOTE:** The mechanical trim controls are also available in the event of electric trim failure, these are only operable from Virtual Cockpit mode.



Electric Trim Controls

**\*NOTE:** The Warrior III is not fitted with Aileron trim

### Flaps Control

Extending / retracting flaps is performed via either the 2D flaps pop-up window, or the Virtual Cockpit flaps lever.

In 2D mode, click the upper end of the flaps handle to extend flaps (1 click = 1 stage of flap) and clicking on the lower end of the lever retracts flaps incrementally.

In Virtual Cockpit mode, to extend or retract flaps, click on the lever and drag the mouse up or down.



VC Flaps lever

2D Flaps lever

### Warning Lights / Annunciators

On the upper part of the panel, directly in front of the pilots' position, you will find the warning lights, or Annunciators panel. The main parts of this equipment are:

- DAY/NIGHT Switch – Dimmer, day=bright
- PRESS TO TEST – Test operation of all lights while button is pressed.
- ANNUNCIATORS – Lights/Indicators

There are six individual warning lights, which, in the event of a problem, indicate to the pilot where something has gone wrong. The six systems wired to this panel are:

1. VOLTS – Warn of low voltage situation (Battery/Alternator problem)
2. VAC – Vacuum System, use Alternate VAC in case of problem.
3. ALT – Alternator charging malfunction.
4. START – Starter Engaged, should extinguish when magnetos set to BOTH.
5. OIL – Oil pressure/temperature warning.
6. PITOT – Pitot heat ON



### Other Instruments

The remaining instruments in the Warrior III require no extended explanation with the exception of a few. Even though each gauge has been programmed from scratch, they still operate as one would expect. Some features that are noteworthy however are:

- True Airspeed calibration (Airspeed Indicator)
- Pitch bar adjustment +/- (Attitude Indicator / Artificial Horizon)
- QNH Adjustment (Altimeter – displayed in inHg. And kilopascals)
- Horizontal Situation indicator (See below)
- Engine Primer (Electric Primer on Warrior III)
- Lighting (Using keyboard short-cut for landing lights will not work as expected, this is due to the use of the landing light tag for the VC gauge backlighting. Taxi light has been used in place of the landing light.)
- Lighting Dimmers (See below)
- Virtual Cockpit Sun visors – Click on either sun visor in VC mode to raise / lower.
- Virtual Cockpit Cabin Air – Click on the Cabin Air Lever in VC mode for aft seating air conditioned air (animation only)
- Virtual Cockpit Exit – Clicking on either exit handle in VC mode will open / close the main exit.
- Virtual Cockpit Storm Window – Clicking on the storm window latch in VC mode, will open / close this window. (Don't forget to yell "CLEAR PROP!")

### Panel Lighting

Much effort has been put into creating a realistic as well as esthetically pleasing panel lighting system that is both functional, and indicative of the real Piper Warrior III. Upon switching on the "INSTRUMENT LIGHTS" switch on the main switch panel, will illuminate the pedestal type lighting, as well as switch and avionics backlighting. The brightness or intensity of this lighting is controlled by the 3 dimmer knobs located on the lower half of the panel in front of the pilot.

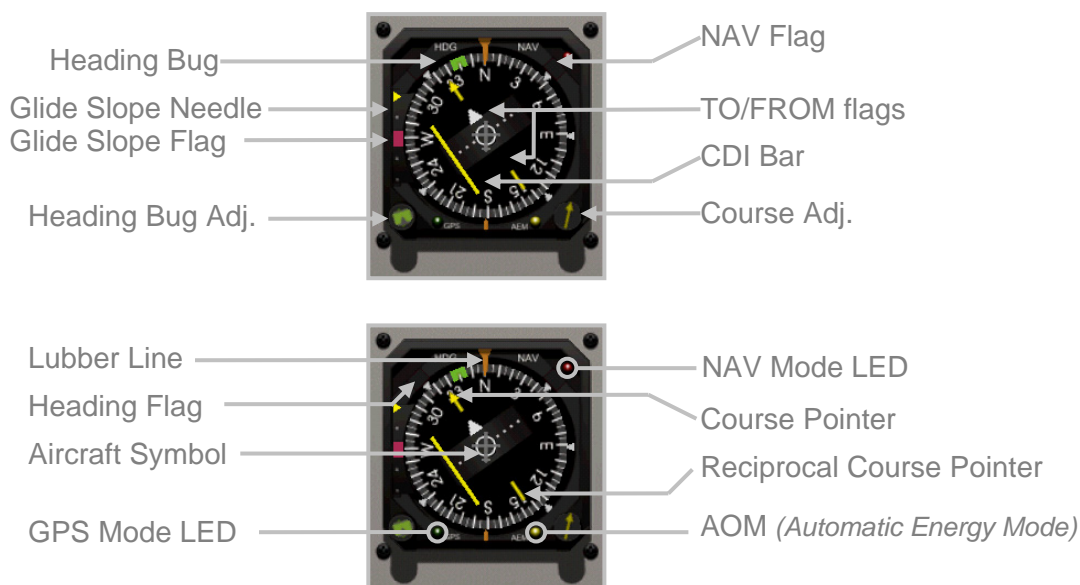
The 3 dimmers control (*in order*) the switch backlighting, pedestal lighting, and avionics backlighting, and have 3 levels of intensity. Clicking on the right or left side of each knob will increase and decrease respectively the intensity of the lighting controlled by that knob. These operate in both 2D and VC modes and can also be controlled by the mouse wheel.





### Horizontal Situation Indicator (H.S.I.)

The “Meggitt Avionics/S-TEC” model **ST-180 H.S.I** that is included with the **Australian Simulation piper Warrior III** is operated much as one would expect. For those users not familiar with these types of instruments, some explanation will be beneficial.



### Indicators and Controls

#### Automatic Energy Mode LED

Indicates that the compass card is being driven by flux sensor information without gyro stabilization.

#### Compass Card

The rotating compass card displays gyro stabilized magnetic compass information behind the lubber line.

#### Course Pointer

Indicates the selected navigation course.

#### Course Select Knob

Positions the course and reciprocal course pointer relative to the compass card.

#### Glideslope pointer

Represents the actual aircraft deviation from the glideslope path.

#### Glideslope Flag

When glideslope not active, or G/S information unusable this flag is in view.

#### GPS LED

Illuminates when GPS navigation information is displayed on the CDI bar.

#### Heading Selector knob

Positions the heading bug relative to the compass card.

**Heading bug**

This is used as a heading reference, or as a heading command sent to the autopilot in HD mode.

**Heading Flag**

In view when compass system not operating correctly.

**CDI Bar**

Course Deviation indicator Bar, displays VOR, LOC or GPS deviation. When referenced against the Aircraft symbol, the position of the bar is the aircraft deviation in relation to the desired course.

**Lubber Line**

Aircraft magnetic heading is read under this line.

**Reciprocal Course pointer**

Indicates the reciprocal of the selected course.

**Aircraft Symbol**

Indicates the relationship of the aircraft relative to the display.

**To/From indicator**

Indicates the position To or from the VOR station or GPS waypoint.

**Operation / Procedures****Heading bug**

Rotate the heading bug in the desired direction by way of the heading bug adjustment knob.

**Navigation VOR/GPS**

Tune the navigation receiver and select desired course with the course select knob. Confirm the NAV flag is not in view, and proceed to fly the CDI needle as normal. If flying GPS course, confirm GPS LED is illuminated.

**Navigation LOC/GS**

Tune the navigation receiver to the localizer or ILS frequency. When the aircraft is positioned to receive the LOC and GS signals ensure NAV and GS flag are not in view.

**\*NOTE:** Each increment of the lateral scale below the CDI bar indicates 2 degree variation.

When Glide Slope is active, GS flag is NOT in view, and GS needle will slide in conjunction with relative position from ILS glide slope. When GS flag is not in view, GS needle information can be trusted.

**ELT Switch**

The ELT Switch (Emergency Locator Transmitter) is included for simulation purposes only. Use as part of your real PWIII checklist.





## Aircraft Control Panel

The Australian Simulation Piper Warrior III version 2 and above, has a new addition, the “ACP” window. This is a small window that represents an in game version of the Aircraft Control panel Software that ships with this package.

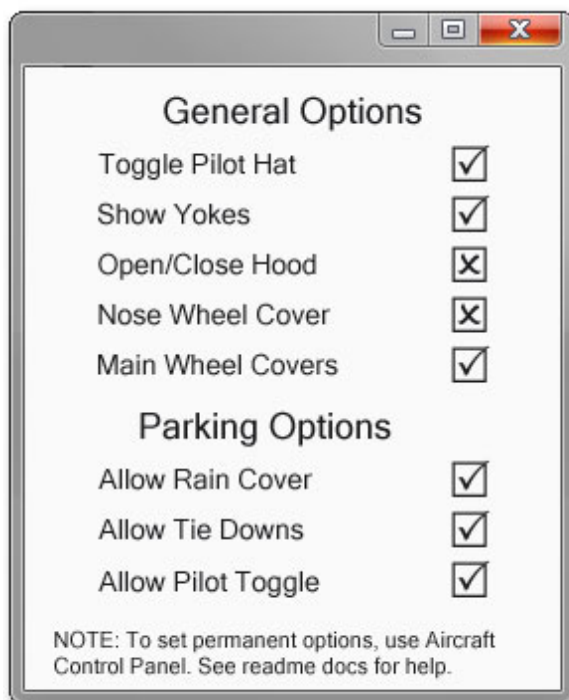
This allows real-time control over the same variables as are available in the Aircraft Control Panel program. The changes you make during your flight are only saved for that particular flight. As soon as you reload the aircraft, or load another aircraft, the changes you made in the “in-game ACP” will be lost.

To make permanent changes to these options, use the Aircraft Control Panel program instead.

To open the in-game ACP window, you can either select it from your “Views → Instrument panel” menu by selecting the ACP menu item, or you can use the keyboard shortcut SHIFT+4.

To make a change, simply click the checkbox that is adjacent to any item. Your change will be made instantly, and the checkbox will display a tick or an X depending on your selection.

NOTE: This window will always load the changes saved from the Aircraft Control Panel program.



The in-game ACP window

## VC Yoke Switching

Another new feature in the Australian Simulation Piper Warrior version 2.0 and above, is the ability to switch visibility of the VC yokes in real-time. You'll agree that this function greatly improves the usability of the cockpit in VC mode.

In the Warrior III cockpit, simply click the yoke poles (obviously only when they're visible), or the panel combing (black area along the top of the panel). Left clicking these areas will switch the visibility of the yokes instantly.

You can also use the in-game ACP window, though this method is slightly cumbersome.



Now you see them...

Left-Clicking the areas shown will switch the visibility state of the Yokes.

As you pass the mouse cursor over these areas, the cursor icon will change to a hand.

NOTE: The in-game ACP window will display the current status of yoke visibility in real-time, so if you change the visibility using the click-spots show here, the ACP window will update itself automatically.



Now you don't!

## FS-X Cameras

Flight Simulator-X™ users have a few extra features available to them by using the new camera system. The Australian Simulation Piper Warrior comes pre-loaded with a whole host of additional camera views for both the external 3D model and the virtual cockpit.

To cycle through these views, press the “A” key, or “SHIFT+A” key combination to cycle either forwards or backwards.

NOTE: The above assumes that you haven’t changed the default keystrokes for the alternate camera view system.

The views available are as follows:

### External Views –

- **Right Wing Cam**  
Camera is positioned just behind the right wing, looking towards the cockpit.
- **Left Wing Cam**  
Camera is positioned just behind the left wing, looking towards the cockpit.
- **Tail Cam**  
Camera is positioned immediately behind the vertical stabiliser looking forward across the top of the aircraft.
- **Gear Cam**  
Camera is positioned immediately behind the right landing gear looking forward.
- **Nose Cam**  
Camera is positioned immediately behind and above the prop spinner, with a zoom level of 0.3, giving a wide field of view.
- **Reverse Nose Cam**  
Camera is positioned in front, and to the right of the nose section, looking back towards the cockpit.

**Internal / VC views –**

- **Default view**  
This is the standard view from the pilots seat.
- **Co-pilot, or passenger view**  
This is the same as the default view, except you are positioned in the right hand seat.
- **Engine Controls**  
This view places the camera directly in front of the throttle and mixture levers. This view also provides an excellent view of the switch panel and engine instruments, as well as the park brake, carb heat switch and rudder trim.
- **Centre Console**  
This places the camera immediately above the flaps and elevator trim console.
- **Avionics**  
Here we can see a great view of the radio stack, ADF and the VOR 2 gauge.
- **Main instruments**  
This view places the camera low on the panel, directly in front of the main instruments and provides an excellent way of practicing IFR training.
- **2D panel system**  
The final position in the cycle, displays the standard 2D panel system. We would recommend doing all your flying from the Virtual Cockpit though, as every function that is available in 2D mode, is also available in VC mode.